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IS PHYSICAL AND MENTAL EXHAUSTION CAUSED BY A SHORTAGE OF ATMOSPHERIC IONS?

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IS PHYSICAL AND MENTAL EXHAUSTION CAUSED BY A SHORTAGE OF ATMOSPHERIC IONS?

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ABSTRACT. In the opinion of certain groups of researchers, a shortage of atmospheric ions leads to rapid physical and mental fatigue, states of exhaustion and anxiety, difficulty in sleeping as well as other psychoneurotic and psychosomatic symptoms. Increased amounts of negative atmospheric ions, on the other hand, are supposed to improve physical and mental conditions. Moreover, the defenses of the organism are supposed to be largely dependent upon a sufficiently high atmospheric ion content. We know from experience that in the cold period of the year, in fog and prolonged rainy seasons the atmospheric ion content is minimal and reaches practically zero in smog. In the case of individuals engaged primarily in seated activity, the uptake of atmospheric ions from the necessarily reduced number present in closed rooms is insufficient. The most modern air conditioning installations have little effect on this. Hence, artificial ionization of rooms by means of ion generators is being increasingly promoted. In this interview, we spoke with Dr. Sc. Techn. ETH Walter Stark, of Lugano-Magliaso (Switzerland), who is involved in the construction of ion generators.



Dr. Walter Stark

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MT: Dr. Stark, you are engaged in work on atmospheric electricity, including atmospheric ions. This has been a controversial era in bioclimatology for decades. It cannot be said that the situation has changed significantly today. On the other hand, you manufacture ion generators that are used, evidently with success, all over the world by famous institutes and clinics for research and therapy.

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*Numbers in the margin indicate pagination in the foreign text.

**MT = Medical Tribune reporter.

In the United States, the unit of transmission capacity has even been named after you. Nevertheless, here is our initial skeptical question: are vital ions really a potential health factor as is claimed?

Dr. Stark: Skepticism has always been a stimulus to us in our work. Criticism is based primarily on earlier publications, which, although they were carefully and industriously performed, were mostly carried out without physical understanding. Since then, the proof of the atmospheric ion effect has been provided, empirically at first, and later in scientifically indisputable basic research.

Negative Activation

MT: *Let us begin by talking about the proof of the existence of atmospheric ions. What influences on the organism are involved?*

Dr. Stark: To state the case simply, with few exceptions we can say that in the case of most physiological effects the negative vital ions have an activating effect and the positive ones have an inhibiting one, as far as the well-being of individuals is concerned.

MT: *What are atmospheric ions?*

Dr. Stark: You know that air consists primarily of nitrogen, oxygen, carbon dioxide and small quantities of noble gases. Most of the components of air are inert and react hardly at all. Several hundreds or thousands of molecules per cubic centimeter of air, however, can carry an electrical charge...

MT: *How come?*

Dr. Stark: For example, due to very small quantities of radioactive substances, so-called cosmic rays from space and (the most important source) lightning discharges, which occur approximately 5,000 times each moment all over the Earth. High voltage discharges of this kind are capable of knocking individual electrons out of the air molecules or adding them. One can therefore speak of positive or negative atmospheric ions.

Ratio of 5:4

MT: *You said several hundred or thousand molecules per cubic centimeter: what causes this difference?*

Dr. Stark: The cleanliness of the air, for example. Positive and negative /2 atmospheric ions usually occur in a ratio of 5:4. In the open countryside, when the sun is shining, we can expect approximately 400-500; in the mountains, more than 1,000. Appropriate climatological stations are able to detect even more than twice as much per cubic centimeters.

MT: *And how about those places where we spend most of our time?*

Dr. Stark: Oh yes, in cities and industrial areas we find extremely low values, between 10 and 100. Large urban areas, for example, yield average values of less than 20 atmospheric ions per cubic centimeter of air during rush hours.

MT: *This means that in those places they probably cannot develop in sufficient numbers.*

Dr. Stark: On the one hand, this is true, because the paving of the street and building up of the land cuts down the number of atmospheric ions produced from the ground through emanation. The atmospheric ions which are produced from irradiation and lightning discharges are destroyed by air pollution and exhaust gases of all kinds. However, the result is a generally positive atmospheric purification effect which takes place even when the atmospheric pollution is very heavy.

MT: *How is this purifying effect explained?*

Dr. Stark: When the atmospheric ions strike a solid particle as they move along rapidly, they lose their activity. The resultant condensation nucleus, however, becomes electrically charged and continues to attract more and more particles, becoming too large and too heavy to float in the air, and falls as dust to the ground.

MT: *Admittedly, we are living in an increasingly unpleasant climate in the cities. In modern buildings, however, with their adequate air conditioning systems, the situation is much improved.*

Dr. Stark: Unfortunately, even there it is possible to measure a content of only 40 to 70 ions per cubic meter using an ionometer.

MT: *Can negative ions be used for disinfection as well?*

Dr. Stark: Yes indeed. In addition to their air purifying effects, atmospheric ions also have a bactericidal effect which has long been used in practice.

78% Reach the Alveoli

MT: *How are these ions absorbed by the organism? If it is through the respiratory tract do they go all the way down into the alveoli?*

Dr. Stark: We know from Russian and American studies that the skin and especially the respiratory tract are of primary significance as ion receptors. It was also the Russian scientists who were able to prove that approximately 78% of the inspired atmospheric ions can reach the alveoli.

MT: *In what situations are negative ions mainly used today for therapeutic purposes?*

Therapeutically Useful

Dr. Stark: For example, in surgery, where extensive research in Germany and the United States have shown that negative potentials appear to accelerate growth of cells and bone. It has also been found that the cell membrane potentials of healthy and tumor cells show significant differences. If it were possible to normalize the potential of cancerous cells, i.e., to increase the insufficiently negative potential, it would be possible to induce normal cell growth once again. For this reason, there have been discussions in the United States concerning the use of negative ions as therapy for certain types of cancer. Finally, significant improvements have been obtained using electro-aerosol therapy, an improved form of ion therapy, to treat diseases of the respiratory tract, such as bronchial asthma, pulmonary emphysema, bronchiectases,

empyemas, various forms of bronchites, laryngitis, pharyngitis and persistent irritating coughs as well as problems of the nasal sinuses with allergic or infectious causes. In Russian hospitals, this method of treatment is employed prophylactically in the inactive phase of rheumatism. In addition, Argentine doctors treat psychosomatic and psychoneurotic symptoms such as exhaustion and anxiety, as well as difficulty in sleeping.

Secretion of Serotonin

MT: *How is the improvement of vegetative symptoms explained etiologically, for example?*

Dr. Stark: The critical factor involved in the nature of the effect is the ratio between positive and negative atmospheric ions, normally 5:4. Even a slight displacement in favor of the positive component in sensitive individuals results in a negative reaction. Positive atmospheric ions lead to an increase in the secretion of serotonin. On the other hand, the MAO, the serotonin-destroying enzymes, have a negative effect. Various states of psychic behavior are dependent upon the brain serotonin content and hence indirectly on the atmospheric ions. In addition, hormones affect the nervous system. The hypothalamus-hypophysis cycle is familiar to us. Russian, American and Italian scientists have been able to note considerable changes in the weight, size and secretion rate of the adrenals, thyroid gland and gonads under the influence of atmospheric ions.

Only During Hypofunction

MT: *Under these circumstances, are we not dealing with a potential "additional stress factor"?*

Dr. Stark: In general, negative ions have only a regulating and normalizing effect upon the human organism and only have a pronounced effect in therapeutic doses when the specific system involved is suffering from hypofunction.

Positive ionization is used in those cases where there is pronounced hypofunction, for example, if insomnia persists despite the use of tranquilizers. The normalizing effect is frequently striking. In order to determine the

bioelectrical condition rapidly, we generally employ an electronic measuring device which is easy to handle.

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